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ABSTRACT

In October 1984, 1985, and 1986, as part of the annual School Program Survey all elementary, secondary, and adult school principals in the Los Angeles School District were asked to provide information on their current computer usage and estimates for coming semesters. This report analyses the data for each semester in the 1984-85 to 1986-87 school years and presents the results by types of school. The brief narrative report indicates that: (1) elementary schools showed a dramatic increase in student use of computers between fall 1984 and fall 1986; (2) elementary students using microcomputers and terminals increased by 70% while the computer rooms at the schools increased fourfold; (3) secondary schools evidenced a dramatic increase in students' using microcomputers but a sharp decrease in their using terminals; (4) Apple computers continued to be the dominant brand used in both elementary and secondary schools, with an increase of over 500% at the elementary level and a tenfold increase at the secondary level in the past two years; and (5) magnet, special education, and adult schools followed the pattern that was typical of elementary schools, with a dramatic increase in students' using microcomputers and terminals and a sharp increase in Apple computers. Several areas for investigation with the intent of improving instruction are suggested. Results of the data analyses, which make up the major part of the report, are presented in 38 tables. (9 references) (CGD)

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**MICROCOMPUTERS IN INSTRUCTION,
LOS ANGELES UNIFIED SCHOOL DISTRICT,
1984-85 THROUGH 1986-87**

PUBLICATION NO. 500

RESEARCH & EVALUATION BRANCH

LOS ANGELES UNIFIED SCHOOL DISTRICT

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1984-85 THROUGH 1986-87**

Publication No. 500

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Los Angeles Unified School District**

September 1987

LOS ANGELES UNIFIED SCHOOL DISTRICT

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EXECUTIVE SUMMARY

In October 1984, 1985, and 1986, as part of the Annual School Program Survey, and primarily at the request of the Office of Instruction, all elementary, secondary, and adult school principals were asked to provide information concerning computer usage for the present and estimates for coming semesters. Data are summarized for each semester in the 1984-85 to 1986-87 school years and presented by type of school.

Elementary schools showed a dramatic increase in student use of computers between fall 1984 and fall 1986. Students using microcomputers and terminals increased by 70% while the computer rooms at the schools increased fourfold. Apple computers continue to be the dominant ones used in elementary schools, with an increase of over 500% in the past 2 years.

Secondary schools evidenced a dramatic increase in students' using microcomputers but a sharp decrease in their using terminals. The Apple computer continues to be the microcomputer that is most widely used, with a tenfold increase in the past 2 years.

Magnet, special education, and adult schools follow the pattern that is typical of elementary schools, with a dramatic increase in students' using microcomputers and terminals and a sharp increase in Apple computers.

INTRODUCTION

The effect of computer assisted instruction (CAI) has been an area of increasing interest in recent years. Researchers have suggested that CAI increases performance in math (Kanevsky, 1985), reading (Geller and Shugoll, 1985), and writing (Prinz and Nelson, 1985) in a variety of school age children. CAI has also been linked to increases in creative problem solving skills (Riding and Powell, 1986). Perhaps the most compelling evidence to suggest the positive effects of CAI comes from Kulik's (1986) meta analysis. Kulik (1986) reviewed 24 controlled research studies and concluded that CAI raised exam scores and reduced instructional time.

In addition to increasing academic skills, CAI has also been effective in fostering creative thinking and a positive attitude toward school. Wismar (1985) suggested that CAI increased student motivation to complete school work and also helped convergent and divergent thinking processes. Eisenberg (1986) suggested that CAI increased student motivation and resulted in a positive self-concept. Adams and Fuchs (1986) highlighted positive student self-concept and increased coping and social skills as positive student by-products.

CAI assisted instruction has also been shown to be effective with disadvantaged and nontraditional learners. Griswold (1985) suggested that CAI increased student achievement, reduced learning time, and established a positive attitude toward school work with lower ability and disadvantaged students.

With the bulk of research studies suggesting that CAI has a positive effect on student learning, it is important to review the implementation of classroom computers in the Los Angeles Unified School District.

BACKGROUND

Each October, principals are asked to provide information about their schools in the Annual School Program Survey. For the past 3 years, primarily at the request of the Office of Instruction, a series of questions outlining the current and estimated future computer usage was included in the spring survey. Principals were asked to report the number of students using microcomputers and terminals, the number of rooms that house computers, and the number and types of various microcomputers at the school.

The purpose of this report was to outline present computer usage and the trends that are occurring in the district. A series of summary tables show computer usage for the past 3 years for elementary, junior high, senior high, magnet, special education, and adult division schools.

PROCEDURE

In October 1984, 1985, and 1986, Form 3 (K-12 sites) and Form 5 (adult education sites) of the Annual School Program Survey were given to principals in each school. The principals were asked to provide a count of students using computers, a count of computer rooms, and the number of computers by type. In addition, they were asked to estimate these figures for the coming semester.

After the forms were returned and keypunched, computer programmers in Information Services Division formatted a report using the Form 3 and Form 5 data. The summary tables for the present report were developed from that listing.

FINDINGS

Tables 1 through 32 present summary information on computer usage for elementary, junior high, senior high, magnets, special education, and adult division schools. This information was presented for fall 1984, 1985, and 1986, and an estimation of resources for spring 1985, 1986, and 1987. For ease of reading, the actual values (fall 1984, fall 1985, and fall 1986) are presented in boldface print.

Elementary schools showed a dramatic increase in computer facilities and the number of students who used the computers from 1984 to 1986. The number of students who used microcomputers and terminals increased by 70% (Table 2) while computer rooms increased by 342% and terminals increased by 268%. The district acquired over 3,000 new Apple computers for elementary schools, representing a 434% increase. (Figure 2.)

The junior high schools also showed a large increase in facilities and student use of computers from 1984 to 1986. The number of computer rooms and terminals nearly tripled, while the number of students using microcomputers increased by 127% (Table 3). In contrast, the number of students using terminals dropped 44%, despite the increase in available terminals at the schools. The number of Apple computers increased dramatically from 1,537 units in fall 1984 to 11,962 units in fall 1986 (1,378%), while other types of computers showed a moderate increase. (Figure 3.)

Senior high schools had a pattern in computer use similar to that of junior high schools. Computer rooms (55% increase), computer terminals (98% increase), and the number of students using microcomputers (55% increase) showed a large increase (Table 4), while only half the number of students were using terminals compared to 2 years ago. The number of Apple computers has increased by 600% while Commodore/Pet/Vic computer usage has dramatically dropped. (Figure 4.)

Magnet schools have also increased their computer usage, with the number of students using microcomputers increasing 88% (Table 5) and terminal usage, 140%. The facilities also grew, with a 169% rise in computer rooms and a 216% increase in terminals. The number of Apple and IBM computers showed dramatic increases of 980% and 1,155%, respectively. (Figure 5.)

The Special Education Division has also seen a rise in facilities and students using computers. In 1984, there were relatively few students using computers. Since that time, over 1,700 students are using microcomputers (Table 32) and almost 300 students are using computer terminals. Facilities have grown to 75 computer rooms and 83 terminals at the schools. Apple appears to be the microcomputer of choice, with 152 units in operation.

The Division of Adult and Occupational Education and magnet schools had a similar pattern of computer usage. Students using microcomputers and terminals, as well as computer rooms and terminals at adult schools, increased dramatically. In addition, there was a sharp rise in the number of Apple computers and IBM computers at the schools.

Table 1 presents summary information for computer usage for the Los Angeles Unified School District. The findings suggest that more students are using microcomputers and there are more terminals and rooms available at the schools. Schools have acquired large numbers of Apple and IBM instruments, and there have been fewer purchases of other types of microcomputer equipment. (Figure 1.)

RECOMMENDATIONS

The information in this report suggests several research questions to investigate, with the intent of improving instruction:

1. What factors account for decreases in computer use?
2. How do teachers combine computer use with instruction?
3. What computer applications are students making frequently: CAI? drill? problem-solving?
4. What relationship exists between a computer application (e.g., drill) and academic skills or achievement?
5. What additional skills and knowledge do teachers need in order to make fuller use of computers in instruction?

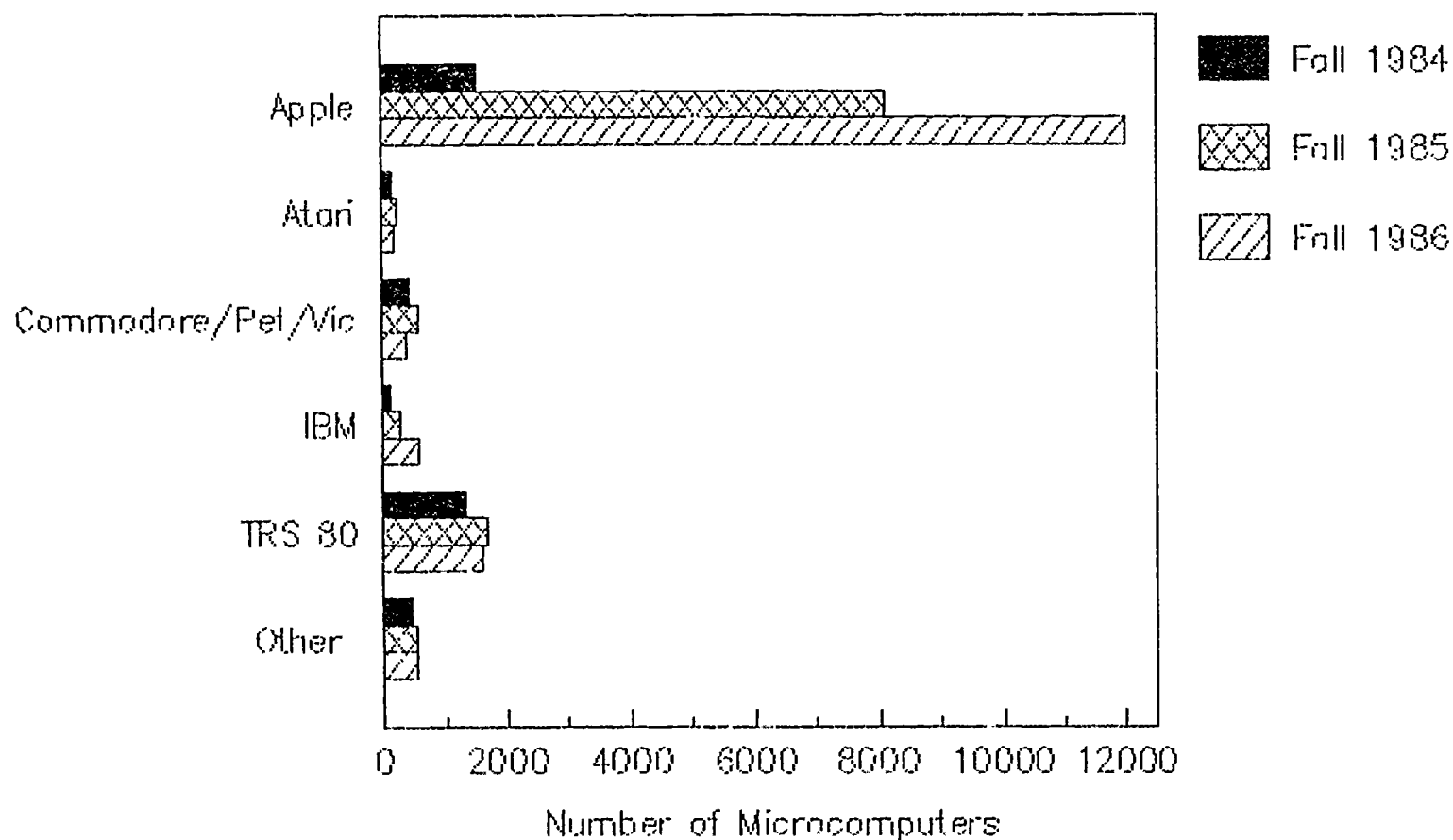


Figure 1. Number of microcomputer units from 1984 to 1986 in the Los Angeles Unified School District.

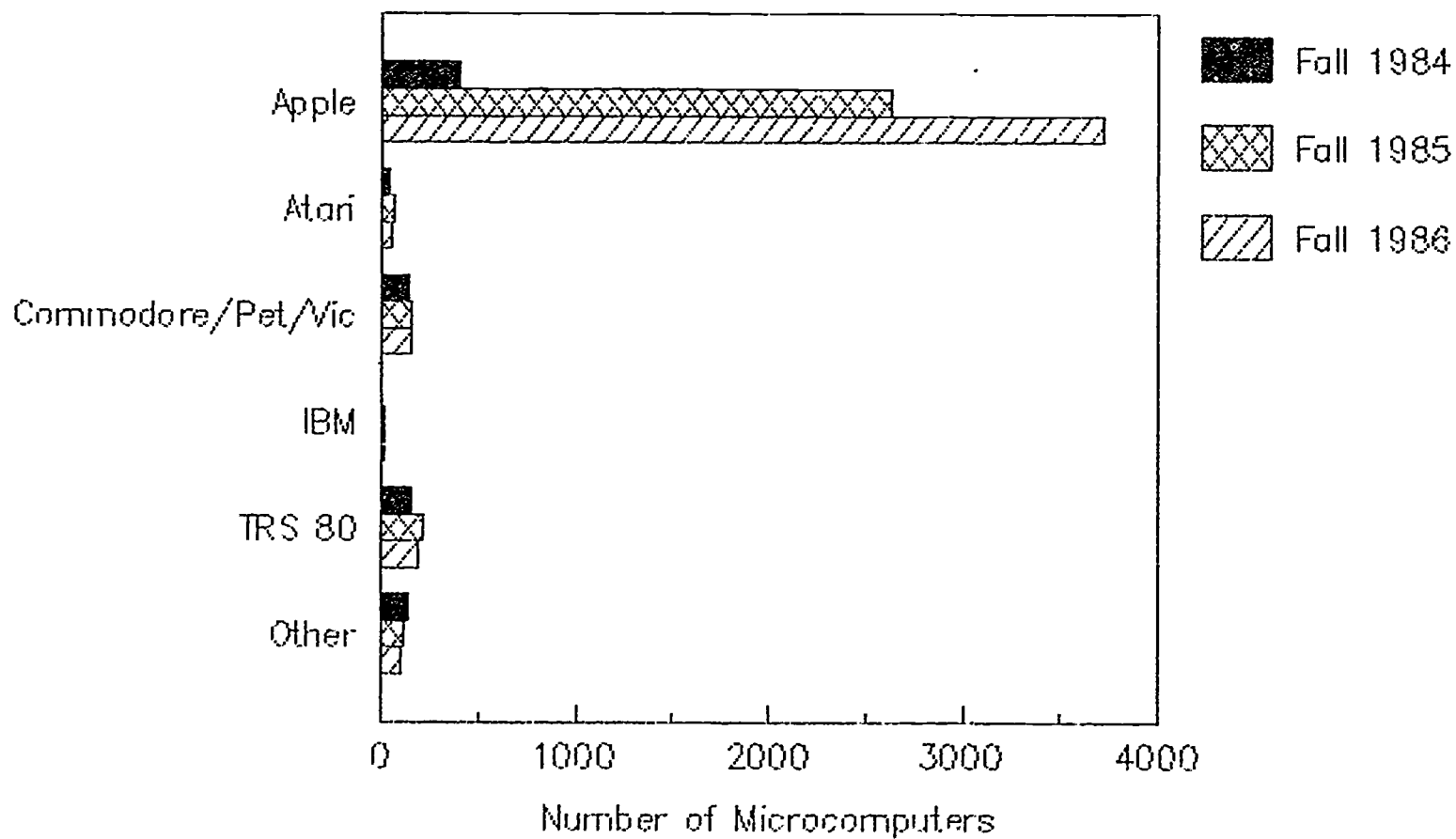


Figure 2. Number of microcomputer units from 1984 to 1986 for elementary schools in the Los Angeles Unified School District.

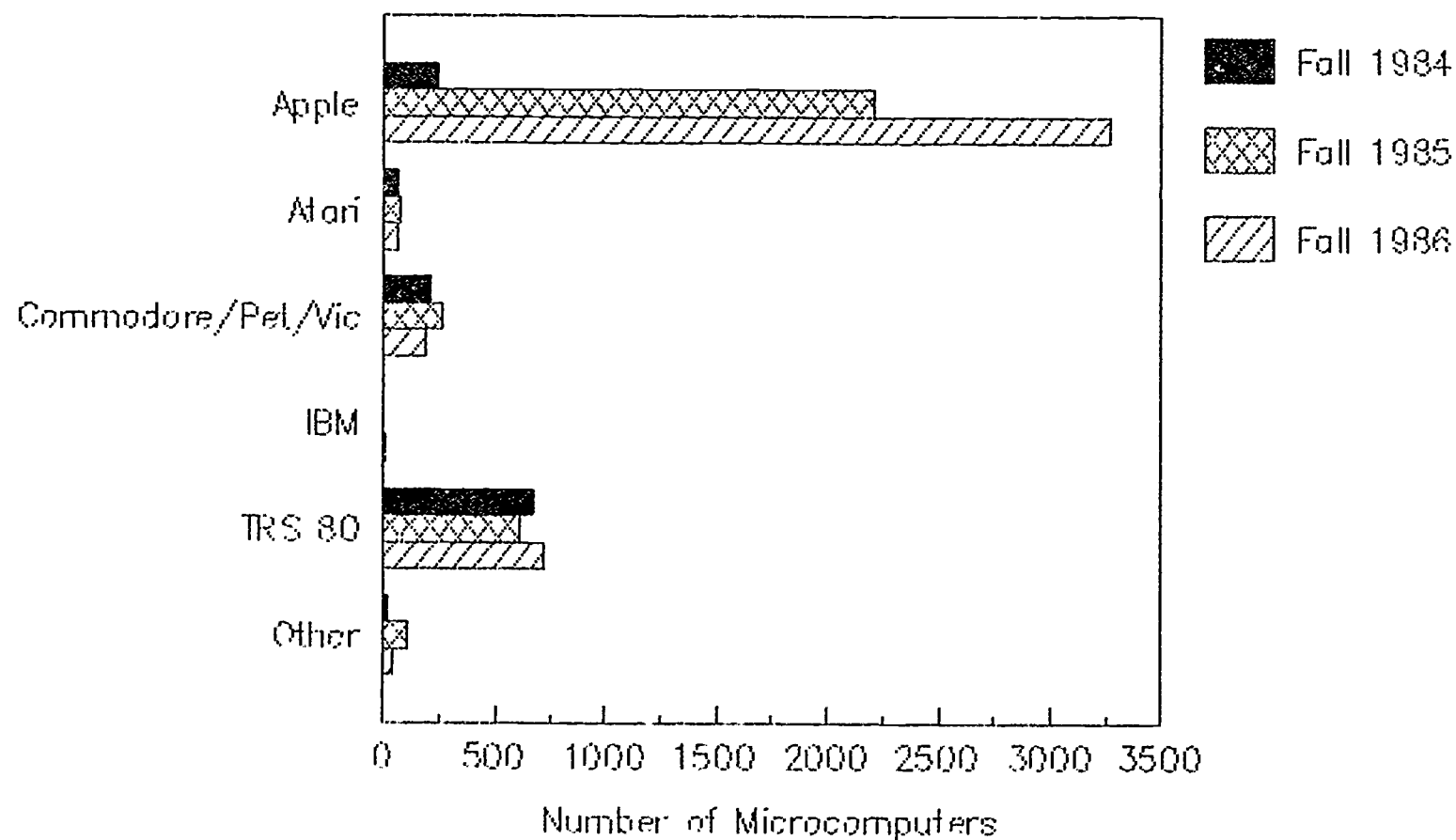


Figure 3. Number of microcomputer units from 1984 to 1986 for junior high schools in the Los Angeles Unified School District.

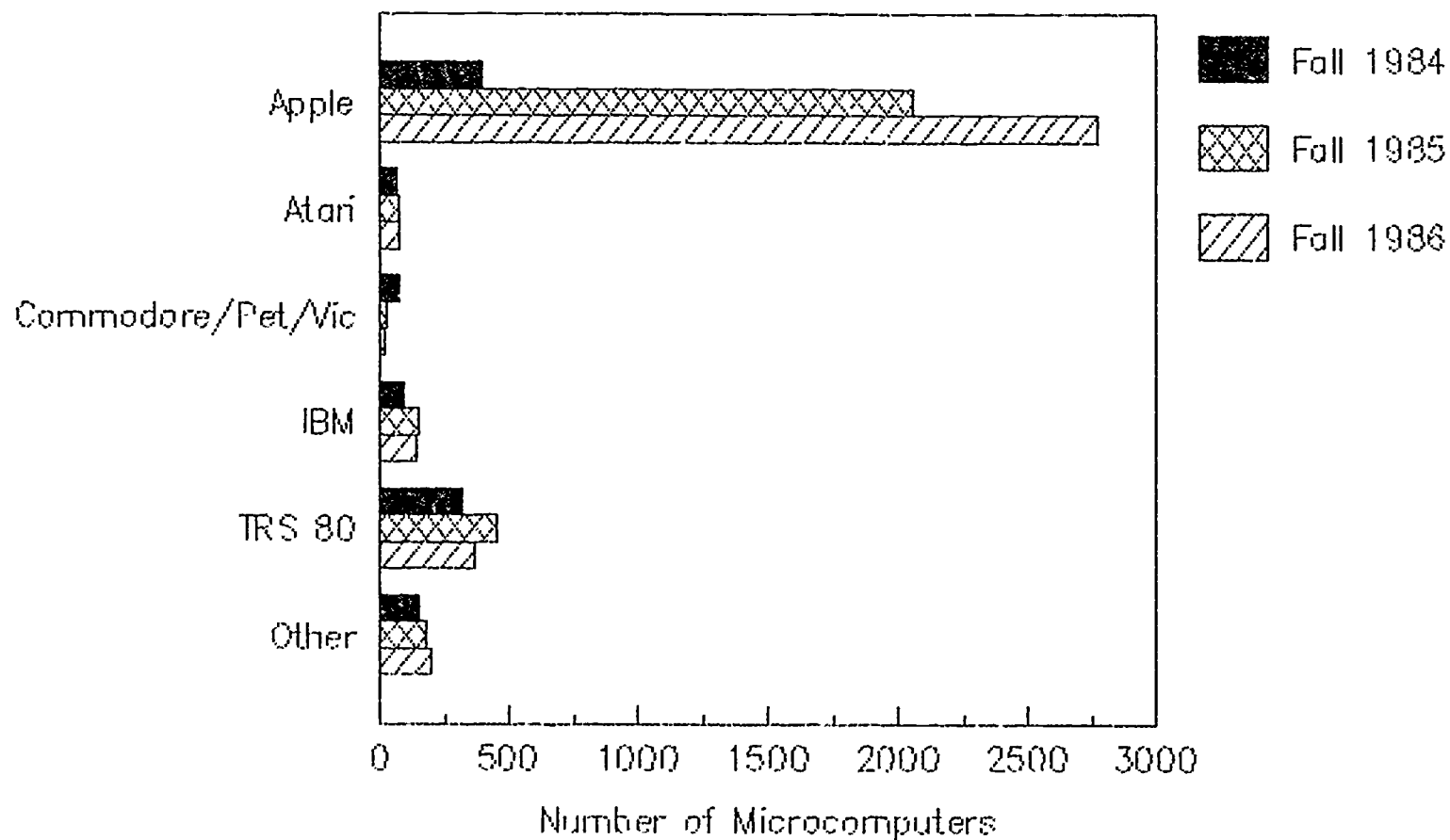


Figure 4. Number of microcomputer units from 1984 to 1986 for senior high schools in the Los Angeles Unified School District.

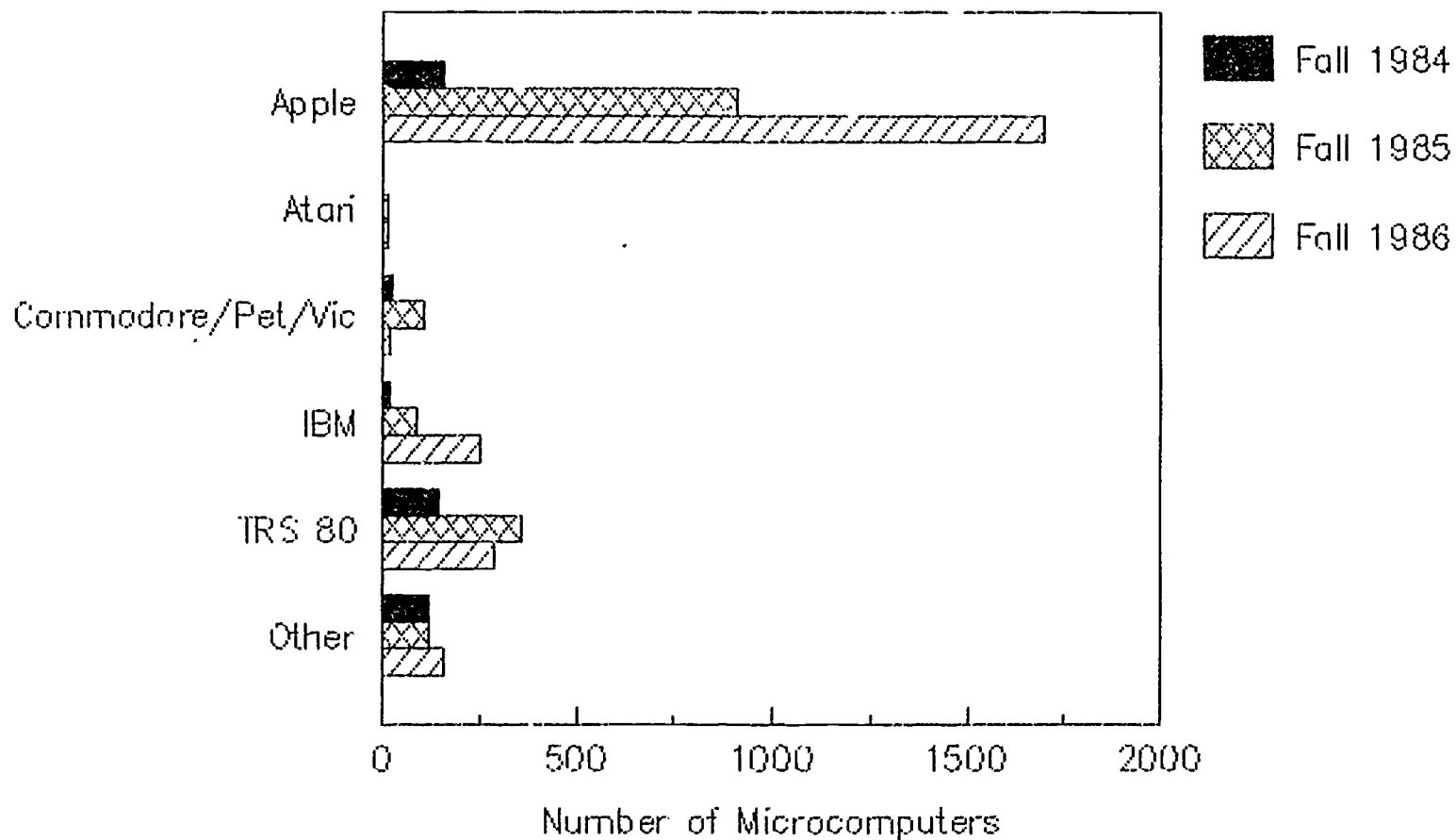


Figure 5. Number of microcomputer units from 1984 to 1986 for magnet schools in the Los Angeles Unified School District.

Table 1

District-Wide Computer Usage: All Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	100,857	125,095	153,865	177,110	173,368	205,247
Students using terminals	17,337	20,578	22,533	24,929	19,125	21,307
Computer rooms at school	1,215	-	3,035	-	4,095	-
Terminals at school	1,302	-	2,377	-	3,779	-
Apples at school	1,537	2,891	8,091	10,158	11,962	14,584
Ataris at school	153	208	216	214	188	201
Commodore/Pet/ Vic at school	438	580	567	577	374	382
IBMs at school	119	242	287	355	575	1,150
TRS 80s at school	1,322	1,572	1,698	1,748	1,608	1,609
Other computers at school	472	542	548	576	560	577
Total micros at school	4,041	6,045	11,407	13,636	15,267	18,503

Note. Actual values printed in boldface.

Table 2

District-Wide Computer Usage: Elementary Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	55,947	71,953	84,889	100,421	94,861	116,742
Students using terminals	6,079	7,959	9,585	10,784	10,320	11,715
Computer rooms at school	602	-	1,801	-	2,664	-
Terminals at school	219	-	527	-	806	-
Apples at school	698	1,141	2,623	3,378	3,726	5,004
Ataris at school	30	37	58	59	45	53
Commodore/Pet/ Vic at school	135	187	152	158	148	153
IBMs at school	1	6	5	11	6	58
TRS 80s at school	145	219	210	221	185	185
Other computers at school	135	176	111	115	97	108
Total micros at school	1,144	1,766	3,159	3,942	4,207	5,561

Note. Actual values printed in boldface.

Table 3

District-Wide Computer Usage: Junior High Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	18,899	21,579	28,508	30,906	33,090	34,635
Students using terminals	5,589	5,991	4,777	5,025	3,116	3,262
Computer rooms at school	131	-	263	-	384	-
Terminals at school	397	-	712	-	1,188	-
Apples at school	237	401	2,209	2,601	3,267	3,643
Ataris at school	60	66	75	80	62	62
Commodore/Pet/Vic at school	206	271	259	259	186	186
IBMs at school	0	0	1	1	8	34
TRS 80s at school	678	792	607	635	721	721
Other computers at school	21	27	102	102	45	45
Total micros at school	1,202	1,557	3,253	3,678	4,289	4,691

Note. Actual values printed in boldface.

Table 4

District-Wide Computer Usage: Senior High Division

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	14,986	18,878	25,932	28,599	23,235	25,841
Students using terminals	4,253	5,006	6,054	6,254	2,110	2,262
Computer rooms at school	244	-	535	-	377	-
Terminals at school	421	-	639	-	833	-
Apples at school	396	76	2,052	2,549	2,774	3,168
Ataris at school	61	93	72	64	72	77
Commodore/Pet/ Vic at school	70	77	24	25	11	12
IBMs at school	93	176	152	155	136	174
TRS 80s at school	318	348	453	457	362	362
Other computers at school	149	153	172	195	194	196
Total micros at school	1,087	1,572	2,925	3,453	3,549	3,989

Note. Actual values printed in boldface.

Table 5

District-Wide Computer Usage: Magnet/Other

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	2,555	10,298	11,779	13,879	17,180	20,823
Students using terminals	1,091	1,241	1,454	2,173	2,619	2,835
Computer rooms at school	188	-	352	-	506	-
Terminals at school	207	-	329	-	655	-
Apples at school	157	441	909	1,237	1,697	2,152
Ataris at school	2	12	11	11	9	9
Commodore/Pet/ Vic at school	22	34	104	106	21	22
IBMs at school	20	54	90	120	251	489
TRS 80s at school	143	174	356	363	286	287
Other computers at school	116	127	118	119	156	159
Total micros at school	460	842	1,588	1,956	2,420	3,118

Note. Actual values printed in boldface.

Table 6

Region A Computer Usage: Elementary Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	4,686	6,403	6,999	10,423	8,433	10,815
Students using terminals	1,132	1,053	775	1,034	380	573
Computer room at school	55	-	188	-	221	-
Terminals at school	11	-	29	-	37	-
Apples at school	70	92	246	316	348	480
Ataris at school	3	3	7	0	5	5
Commodore/Pet/ Vic at school	4	5	6	0	3	3
IBMs at school	0	0	0	1	0	8
TRS 80s at school	2	2	3	0	2	2
Other computers at school	0	0	0	0	1	1
Total micros at school	79	102	262	333	359	499

Note. Actual values printed in boldface.

Table 7

Region B Computer Usage: Elementary Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	6,889	9,076	13,255	14,819	13,248	15,338
Students using terminals	584	1,226	3,784	3,991	1,310	1,583
Computer rooms at school	43	-	198	-	548	-
Terminals at school	32	-	155	-	124	-
Apples at school	46	108	314	410	504	638
Ataris at school	0	0	0	0	0	0
Commodore/Pet/ Vic at school	29	50	30	33	35	38
IBMs at school	0	0	3	6	3	8
TRS 80s at school	61	98	101	110	92	92
Other computers at school	6	10	4	0	12	12
Total micros at school	142	266	452	563	646	788

Note. Actual values printed in boldface.

Table 8

Region C Computer Usage: Elementary Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	6,578	9,505	12,173	14,059	13,019	14,817
Students using terminals	1,474	2,159	939	1,018	981	1,439
Computer rooms at school	63	-	235	-	287	-
Terminals at school	44	-	39	-	172	-
Apples at school	89	191	352	415	460	626
Ataris at school	7	7	5	6	5	5
Commodore/Pet/ Vic at school	27	37	24	26	19	19
IBMs at school	0	0	0	1	0	20
TRS 80s at school	5	6	12	13	12	12
Other computers at school	30	42	18	21	5	7
Total micros at school	158	199	411	482	501	689

Note. Actual values printed in boldface.

Table 9

Region D Computer Usage: Elementary Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	9,186	10,886	11,789	12,950	12,428	15,587
Students using terminals	252	344	325	359	601	603
Computer rooms at school	105	-	268	-	323	-
Terminals at school	20	-	67	-	85	-
Apples at school	117	167	381	512	540	701
Ataris at school	17	23	28	28	29	29
Commodore/Pet/ Vic at school	43	51	60	61	58	60
IBMs at school	0	0	0	0	0	3
TRS 80s at school	2	13	15	15	12	12
Other computers at school	33	46	30	30	16	25
Total micros at school	212	300	514	546	655	830

Note. Actual values printed in boldface.

Table 10

Region E Computer Usage: Elementary Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	8,655	11,179	11,714	13,816	12,788	16,098
Students using terminals	629	700	562	597	1,444	1,635
Computer rooms at school	129	-	224	-	291	-
Terminals at school	24	-	32	-	71	-
Apples at school	105	142	337	427	450	640
Ataris at school	0	0	1	1	0	0
Commodore/Pet/ Vic at school	17	17	16	16	19	19
IBMs at school	1	0	1	1	0	3
TRS 80s at school	18	18	12	12	15	15
Other computers at school	17	18	22	22	16	16
Total micros at school	158	196	389	479	500	693

Note. Actual values printed in boldface.

Table 11

Region F Computer Usage: Elementary Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	7,791	9,265	12,823	14,826	13,456	16,931
Students using terminals	315	324	613	819	2,968	1,973
Computer rooms at school	68	-	243	-	256	-
Terminals at school	28	-	31	-	75	-
Apples at school	87	150	374	473	446	645
Atris at school	3	4	5	5	3	11
Commodore/Pet/ Vic at school	0	0	1	1	1	1
IBMs at school	0	4	1	1	1	9
TRS 80s at school	22	42	33	34	18	18
Other computers at school	23	26	20	20	17	17
Total micros at school	135	226	434	534	486	701

Note. Actual values printed in boldface.

Table 12

Region G Computer Usage: Elementary Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	6,256	7,243	8,337	10,224	10,524	13,721
Students using terminals	187	280	1,127	1,296	1,988	2,299
Computer rooms at school	67	-	215	-	287	-
Terminals at School	18	-	78	-	114	-
Apples at school	88	122	286	401	469	626
Ataris at school	0	0	11	11	3	3
Commodore/Pet/ Vic at school	13	25	12	12	10	10
IBMs at school	0	0	0	1	0	4
TRS 80s at school	17	18	17	17	18	18
Other computers at school	10	12	11	11	14	14
Total micros at school	128	177	387	503	514	675

Note. Actual values printed in boldface.

Table 13

Region H Computer Usage: Elementary Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	5,897	8,396	7,799	9,304	10,965	13,435
Students using terminals	1,506	1,873	1,460	1,640	1,548	1,610
Computer rooms at school	72	-	230	-	451	-
Terminals at school	42	-	96	-	128	-
Apples at school	96	169	333	424	509	648
Ataris at school	0	0	1	1	0	0
Commodore/Pet/ Vic at school	2	2	3	3	3	3
IBMs at school	0	0	0	0	2	3
TRS 80s at school	18	18	17	17	16	16
Other computers at school	16	22	6	7	16	16
Total micros at school	132	211	360	452	546	686

Note. Actual values printed in boldface.

Table 14

Region A Computer Usage: Junior High Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	1,715	2,456	2,015	2,925	3,209	3,430
Students using terminals	42	122	24	24	0	0
Computer rooms at school	10	-	30	-	34	-
Terminals at school	2	-	26	-	0	-
Apples at school	24	86	250	326	395	424
Ataris at school	0	0	0	0	1	1
Commodore/Pet/ Vic at school	21	43	16	16	8	8
IBMs at school	0	0	0	0	0	0
TRS 80s at school	46	49	36	36	35	35
Other computers at school	1	0	5	5	1	1
Total micros at school	92	179	307	383	440	469

Note. Actual values printed in boldface.

Table 15

Region B Computer Usage: Junior High Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	2,345	2,345	6,060	6,370	4,312	4,473
Students using terminals	2,102	2,107	1,753	1,853	1,032	1,075
Computer rooms at school	22	-	42	-	44	-
Terminals at school	48	-	112	-	106	-
Apples at school	14	33	237	252	325	351
Ataris at school	0	0	0	0	0	0
Commodore/Pet/ Vic at school	39	41	19	19	11	11
IBMs at school	0	0	0	0	2	2
TRS 80s at school	61	83	58	58	43	43
Other computers at school	0	1	17	17	0	0
Total micros at school	114	158	331	316	381	407

Note. Actual values printed in boldface.

Table 16

Region C Computer Usage: Junior High Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	2,017	2,697	2,785	2,961	3,155	3,255
Students using terminals	2,032	2,265	2,171	2,234	290	294
Computer rooms at school	12	-	29	-	32	-
Terminals at school	75	-	72	-	225	-
Apples at school	31	60	236	293	356	387
Ataris at school	2	2	2	2	2	2
Commodore/Pet/ Vic at school	0	10	0	0	0	0
IBMs at school	0	0	0	0	1	11
TRS 80s at school	31	33	27	27	33	33
Other computers at school	10	10	11	11	20	20
Total micros at school	74	115	276	333	412	453

Note. Actual values printed in boldface.

Table 17

Region D Computer Usage: Junior High Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	3,328	3,386	3,366	3,399	4,937	5,144
Students using terminals	350	40	368	407	126	148
Computer rooms at school	18	-	28	-	65	-
Terminals at school	36	-	21	-	71	-
Apples at school	39	46	263	329	488	566
Ataris at school	0	0	0	1	0	0
Commodore/Pet/ Vic at school	17	17	43	43	44	44
IBMs at school	0	0	0	0	0	1
TRS 80s at school	104	117	97	102	112	112
Other computers at school	0	0	1	1	1	1
Total micros at school	160	182	404	476	645	724

Note. Actual values printed in boldface.

Table 18

Region E Computer Usage: Junior High Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	2,192	2,378	3,030	3,243	4,507	3,687
Students using terminals	709	0	85	85	967	967
Computer rooms at school	22	-	39	-	54	-
Terminals at school	47	-	125	-	154	-
Apples at school	28	39	351	369	535	601
Ataris at school	38	44	48	48	40	40
Commodore/Pet/ Vic at school	75	85	67	67	66	66
IBMs at school	0	0	1	1	1	4
TRS 80s at school	43	47	60	60	59	59
Other computers at school	0	5	2	2	1	1
Total micros at school	184	220	529	547	702	771

Note. Actual values printed in boldface.

Table 19

Region F Computer Usage: Junior High Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	3,286	3,613	3,472	3,785	3,741	4,195
Students using terminals	48	86	258	301	585	662
Computer rooms at school	28	-	52	-	66	-
Terminals at school	60	-	89	-	293	-
Apples at school	59	90	417	493	611	663
Ataris at school	17	17	22	26	18	18
Commodore/Pet/ Vic at school	28	36	39	39	37	37
IBMs at school	0	0	0	0	2	14
TRS 80s at school	49	61	71	88	122	122
Other computers at school	0	0	50	50	11	11
Total micros at school	153	204	599	696	801	865

Note. Actual values printed in boldface.

Table 20

Region G Computer Usage: Junior High Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	2,664	3,124	5,750	5,860	6,396	6,396
Students using terminals	306	306	118	121	116	116
Computer rooms at school	10	-	17	-	26	-
Terminals at school	129	-	237	-	339	-
Apples at school	26	26	248	266	287	299
Ataris at school	3	3	3	3	1	1
Commodore/Pet/ Vic at school	9	9	66	66	7	7
IBMs at school	0	0	0	0	2	2
TRS 80s at school	318	358	214	220	277	277
Other computers at school	10	10	0	0	0	0
Total micros at school	366	406	531	555	574	586

Note. Actual values printed in boldface.

Table 21

Region H Computer Usage: Junior High Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	1,352	1,580	2,050	2,363	2,833	4,055
Students using terminals	0	0	0	0	0	0
Computer rooms at school	9	-	26	-	63	-
Terminals at school	0	-	30	-	0	-
Apples at school	16	19	207	273	270	352
Ataris at school	0	0	0	0	0	0
Commodore/Pet/ Vic at school	17	30	9	9	13	13
IBMs at school	0	0	0	0	0	0
TRS 80s at school	26	44	44	44	40	40
Other computers at school	0	0	16	16	11	11
Total micros at school	59	83	267	342	334	416

Note. Actual values printed in boldface.

Table 22

Senior High Division Computer Use: Senior High Schools

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	12,839	16,182	23,802	26,054	23,233	25,841
Students using terminals	3,626	4,330	5,532	5,485	2,110	2,262
Computer rooms at school	193	-	414	-	377	-
Terminals at school	381	-	565	-	833	-
Apples at school	335	569	1,739	2,118	2,774	3,168
Ataris at school	61	84	64	64	72	77
Commodore/Pet/ Vic at school	55	62	21	22	11	12
IBMs at school	79	130	101	104	136	174
TRS 80s at school	307	336	364	368	362	362
Other computers at school	142	146	162	184	194	196
Total micros at school	979	1,327	2,451	2,860	3,549	3,989

Note. Actual values printed in boldface.

Table 23

Senior High Division Computer Usage: Magnet/Other

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	2,147	2,696	2,130	2,545	3,855	4,934
Students using terminals	627	676	522	769	578	681
Computer rooms at school	51	-	121	-	147	-
Terminals at school	40	-	74	-	190	-
Apples at school	61	156	313	431	651	801
Ataris at school	0	9	8	0	7	7
Commodore/Pet/ Vic at school	15	15	3	3	7	7
IBMs at school	14	46	51	51	74	85
TRS 80s at school	11	12	89	89	114	114
Other computers at school	7	7	10	11	15	17
Total micros at school	108	245	474	593	868	1,031

Note. Actual values printed in boldface.

Table 24

Region A Computer Usage: Magnet/Other

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	556	606	662	1,011	1,080	902
Students using terminals	0	0	0	0	439	259
Computer rooms at school	10	-	17	-	24	-
Terminals at school	1	-	1	-	30	-
Apples at school	2	5	24	38	30	34
Ataris at school	0	0	0	0	0	0
Commodore/Pet/ Vic at school	1	1	0	0	1	1
IBMs at school	1	1	0	0	0	1
TRS 80s at school	3	3	7	7	4	4
Other computers at school	4	4	1	1	0	0
Total micros at school	11	14	32	46	35	40

Note. Actual values printed in boldface.

Table 25

Region B Computer Usage: Magnet/Other

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	35	65	80	63	138	145
Students using terminals	0	-	0	-	-	-
Computer rooms at school	4	-	10	-	9	-
Terminals at school	0	-	0	-	0	-
Apples at school	0	0	2	12	12	15
Ataris at school	0	0	0	0	0	0
Commodore/Pet/ Vic at school	0	0	0	0	0	0
IBMs at school	0	0	0	0	0	0
TRS 80s at school	2	6	2	6	2	2
Other computers at school	0	0	0	0	5	5
Total micros at school	2	6	4	8	19	22

Note. Actual values printed in boldface.

Table 26

Region C Computer Usage: Magnet/Other

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	314	380	304	453	670	735
Students using terminals	33	33	55	60	0	0
Computer rooms at school	8	-	10	-	12	-
Terminals at school	0	-	9	-	0	-
Apples at school	3	24	13	22	21	33
Ataris at school	1	1	2	2	1	1
Commodore/Pet/ Vic at school	0	6	0	0	0	0
IBMs at school	0	0	0	0	0	0
TRS 80s at school	7	7	7	7	6	6
Other computers at school	0	2	0	0	1	1
Total micros at school	11	40	22	31	29	41

Note. Actual values printed in boldface.

Table 27

Region D Computer Usage: Magnet/Other

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	1,563	895	2,563	2,763	2,914	3,223
Students using terminals	25	27	33	45	100	120
Computer rooms at school	37	-	70	-	69	-
Terminals at school	40	-	11	-	2	-
Apples at school	25	33	125	187	243	372
Ataris at school	0	0	0	0	0	0
Commodore/Pet/ Vic at school	1	1	10	0	1	1
IBMs at school	0	0	0	1	0	1
TRS 80s at school	11	24	31	31	19	19
Other computers at school	39	39	41	41	44	44
Total micros at school	76	97	207	270	307	437

Notes. Actual values printed in boldface.

Table 28

Region E Computer Usage: Magnet/Other

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	954	1,012	1,172	1,222	1,059	1,059
Students using terminals	0	0	0	0	330	330
Computer rooms at school	6	-	10	-	26	-
Terminals at school	22	-	0	-	55	-
Apples at school	8	9	20	34	66	77
Ataris at school	1	1	1	1	1	1
Commodore/Pet/ Vic at school	0	0	2	3	4	4
IBMs at school	0	0	0	0	3	6
TRS 80s at school	26	26	26	27	9	10
Other computers at school	5	5	7	7	19	19
Total micros at school	40	41	56	72	102	117

Note. Actual values printed in boldface.

Table 29

Region F Computer Usage: Magnet/Other

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	1,308	1,829	1,519	1,945	1,879	2,038
Students using terminals	0	43	181	586	211	211
Computer rooms at school	13	-	15	-	41	-
Terminals at school	35	-	2	-	53	-
Apples at school	8	29	51	64	150	173
Ataris at school	0	1	0	0	0	0
Commodore/Pet/ Vic at school	0	0	1	1	0	0
IBMs at school	0	1	0	0	0	1
TRS 80s at school	28	40	28	30	62	62
Other computers at school	10	11	14	14	4	4
Total micros at school	46	82	94	109	216	240

Note. Actual values printed in boldface.

Table 30

Region G Computer Usage: Magnet/Other

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	251	251	329	310	146	146
Students using terminals	81	81	0	0	1	1
Computer rooms at school	6	-	8	-	6	-
Terminals at school	11	-	61	-	1	-
Apples at school	1	1	1	1	5	7
Ataris at school	0	0	0	0	0	0
Commodore/Pet/ Vic at school	0	0	0	0	0	0
IBMs at school	0	0	0	0	0	0
TRS 80s at school	12	12	6	6	6	6
Other computers at school	0	0	0	0	0	0
Total micros at school	13	13	7	7	11	13

Note. Actual values printed in boldface. Rev. 10-87

Table 31

Region H Computer Usage: Magnet/Other

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	137	177	263	262	435	435
Students using terminals	0	0	0	0	0	0
Computer rooms at school	3	-	7	0	8	-
Terminals at school	0	-	0	-	27	-
Apples at school	-	1	5	8	21	23
Ataris at school	0	0	0	0	0	0
Commodore/Pet/ Vic at school	0	0	0	0	0	0
IBMs at school	0	0	0	0	0	0
TRS 80s at school	5	5	10	10	10	10
Other computers at school	0	0	0	0	0	0
Total micros at school	5	6	15	18	31	33

Note. Actual values printed in boldface.

Table 32

District-Wide Computer Usage: Special Education Division

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	806	1,274	1,450	1,625	1,720	2,328
Students using terminals	5	40	152	203	285	302
Computer rooms at school	26	-	37	-	75	-
Terminals at school	17	-	18	-	83	-
Apples at school	29	50	90	128	152	212
Ataris at school	0	0	0	0	0	0
Commodore/Pet/ Vic at school	0	0	0	0	0	1
IBMs at school	0	0	0	0	0	4
TRS 80s at school	2	2	3	3	3	3
Other computers at school	10	12	10	10	17	17
Total micros at school	41	74	103	141	172	237

Note. Actual values printed in boldface.

Table 33

District-Wide Computer Usage: Division of Adult and Occupational Education

Item	Fall 1984	Spring 1985 (Expected)	Fall 1985	Spring 1986 (Expected)	Fall 1986	Spring 1987 (Expected)
Students using micros	1,064	1,113	1,307	1,680	3,284	4,878
Students using terminals	320	341	511	490	675	931
Computer rooms at school	24	-	47	-	89	-
Terminals at school	41	-	152	-	214	-
Apples at school	20	133	208	265	346	405
Ataris at school	0	0	0	0	0	0
Commodore/Pet/ Vic at school	5	11	28	29	8	8
IBMs at school	5	6	39	68	174	391
TRS 80s at school	36	37	69	69	51	51
Other computers at school	41	47	35	35	51	52
Total micros at school	107	234	379	466	630	907

Note. Actual values printed in boldface.

REFERENCES

- Adams, D. R. & Fuchs, M. (1986). Using the computer for children with special needs. Momentum, 17(2), 33-34
- Eisenberg, Y. (1986). The effects of computer-based instruction on college students' interest and achievement. Educational Technology, 26, 40-43.
- Geller, D. & Shugoll, M. (1985). The impact of computer assisted instruction on disadvantaged young adults in a non-traditional educational environment. AEDS Journal, 19, 15-16.
- Griswold, P. (1986). Computer assisted instruction: More than just a drill. Rural Educator, 17, 15-16.
- Kanevsky, L. (1985). Computer-based math for gifted students: comparison of cooperative and competitive strategies. Journal for the Education of the Gifted, 8(4), 239-255.
- Kulik, C. (1986). The effectiveness of computer-based adult education: A meta analysis. Journal of Educational Computing, 2, 235-252.
- Prinz, P. & Nelson, K. (1985). Alligator eats cookie: Acquisition of writing and reading skills by deaf children using the microcomputer. Journal of Applied Psycholinguistics, 6, 283-306.
- Riding, R. & Powerl, S. (1986). The improvement of thinking skills in young children using computer activities: A replication and extension. Educational Psychology, 6, 179-183.
- Wismar, B. (1985). Microcomputers: How can they be used to enhance creative development? Journal of Creative Behavior, 19, 97-102.